

# The Phasmid Egg

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## Key words

Phasmida, Eggs, Egg terminology, Egg descriptions.

The phasmid egg has some special properties, being on the whole large and robust. So robust indeed, that eggs can be dissected from museum specimens over a hundred years old and externally they appear indistinguishable from those newly laid. There is no difficulty in keeping a collection, mounted or loose. But why bother? Because a proper knowledge of the egg is a great aid to the identification and classification of the adult animal. The eggs all have a distinct operculum and micropylar plate (even if - as in some *Dares* - the plate is almost invisible from the surface and is only clearly revealed by viewing the shell from inside). As far as is known, the phasmid egg is unique, no other insect having this combination of features, and no phasmid lacking them.

As long ago as 1871 Kaup published illustrations and descriptions of twenty six species, and put forward the suggestion that a study of the eggs would be a great help in classifying the insects. It is a pity that his illustrations were rather poor and his descriptions brief, although he had the example of J. Müller's (1825) much earlier splendidly detailed study of the egg of *Bacteria ferula*. Although there were casual references to Kaup's ideas, nothing systematic was done until over a century later when I set out the standard descriptive methods for phasmid eggs (Clark 1976) and described and figured the eggs of the few species then in culture, and incidentally coined the word *ootaxonomy* for the study of the value of eggs in classification. Since then I have made more extensive surveys, including a genus key (Clark 1979), a survey of leaf insect eggs (Clark 1978) and investigations of distribution and nature of the capitulum (Clark 1976, Sellick 1988) and the micropylar plate (Sellick 1987) within the order.

Why am I writing about this now? Because I am aiming to get together a comprehensive survey of all that is at present known about egg structure, combining my own work with that scattered through the literature. Quite a lot has appeared in the *PSG Newsletter*, and it would be interesting to see what the *Newsletter* has provided. Eggs of sixty three species have been figured, with degrees of usefulness varying from tiny indefinite sketches to large detailed drawings. Few have been illustrated from more than one point of view. Of the 120 plus PSG numbered species, only 47 eggs have appeared in any form in the *Newsletter*. Out there among the PSG members must be a mass of untapped material, waiting to make a contribution to scientific research. I am putting together a standard reference collection of mounted egg material, a full set for any one species being two intact eggs (mounted to show different views), a separate operculum, and a dissected egg to show internal shell structure. I have accumulated 118 species, but many are incomplete sets and for only 93 species do I know the eggs thoroughly.

Can I plead with anyone writing about eggs of a new species to illustrate both dorsal and lateral views (the latter conventionally with the micropylar plate to the left) and as well as the general description to give a series of standard measurements. Here is the standard descriptive method for phasmid eggs:

Dimensions should be given to the nearest 0.1mm. Remember when describing opercula and capitula to use height, width and length in the same sense as the main capsule. Thus what would instinctively be thought of as the height of a capitulum (distance from the operculum) should be referred to as its length. To describe eggs effectively requires more than a magnifying glass, and I recommend a lower power stereo microscope with a measuring graticule in the eyepiece. Many members may not have access to such an instrument, and in these cases I would be happy to receive material (empty, hatched eggs are quite suitable, but please include loose opercula) and

make the necessary examinations and drawings.

In describing eggs beware of using the term capitulum for any high-rise operculum. A capitulum is strictly separate from the operculum and will typically absorb warm alkali and swell up. Many are on stalks on the operculum, but some form a dome over the entire top. Some are solid, some are hollow (and these tend to collapse with age);

some hollow ones are perforated on the surface. Many are a distinct colour from the capsule or operculum. The large structure of *Phyllium* spp. eggs is just a raised operculum. Also be careful about colour descriptions; it may well vary considerably in a single batch of eggs.

Egg capsule shape varies considerably throughout the order. Most are essentially spheres deformed to various extents, so that some end up almost as discs or cylinders. In general, apart from the opercular region, there is a smooth outline, though a minority of the eggs have posterior protrusions which in at least one case becomes a spike to stick the egg into the foodplant.

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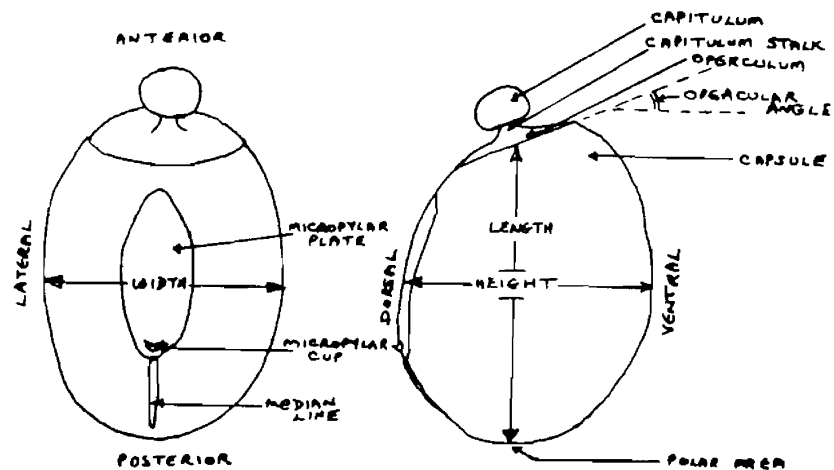


Figure 1. Illustration to show the terms used to describe eggs.